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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/868,573	08/20/2001	Mitsuo Zen	1029/HIROSE	1494

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EXAMINER
EDMONDSON, LYNNE RENEE

ART UNIT	PAPER NUMBER
1725	

DATE MAILED: 10/30/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/868,573	ZEN, MITSUO	
	Examiner	Art Unit	
	Lynne Edmondson	1725	

-- The MAILING DATE of this communication app ars on the cover sheet with th correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 August 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *16-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *16-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

1. Claims 16-23, 25, 27-29 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Fister et al. (USPN 4978052).

Fister teaches a method of forming a solder coated material comprising the steps of electroplating a layer of material having excellent solderability on a substrate comprising Fe-Ni (16) (col 5 lines 1-18) as an oxidation resistant coating having a thickness of 1.2 to 5 microns (col 5 lines 45-64) and then passing the difficult to solder material through molten solder to form a dip solder plating layer (18) having a thickness of about 25 microns (1 mil) (col 9 lines 15-48). The solderable material may be a Sn-Ag alloy (col 4 lines 1-16). The method may be used to join a lid of a packaged part (col 1 lines 49-58) and may be performed in an inert atmosphere (col 7 lines 28-58). See also Fister claims 1-16.

2. Claims 16-18, 20-22, 24, 25, 27, 28, 31, 34, -36, 39, 41 and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Geschwind (USPN 4331258).

Geschwind teaches a method of bonding a lid to a package or lead frame (col 2 lines 53-64 and col 3 lines 1-12) comprising the steps of electroplating a layer of material having excellent solderability (gold or nickel) on a substrate comprising Fe-Ni (col 1 lines 25-32 and col 4 lines 12-27) wherein the plated layer is 1.2 to 2.5 microns and the solder layer is 50 microns (2 mils, col 2 lines 35-52). The molten solder is coated by dipping (col 4 lines 32-66). See also Geschwind claims 1-7.

3. Claims 16-18, 20-22, 24, 25, 27-29, 31, 34, 36, 39, 41 and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Nagashima et al. (USPN RE34484).

Nagashima teaches a method of forming a solder coated material comprising the steps of electroplating a layer of material having excellent solderability (gold) on a substrate comprising Fe-Ni (Kovar) (col 5 lines 1-6 and col 4 lines 16-33) wherein the plating thickness is 0.5 to 5 microns (col 2 lines 15-47 and col 3 lines 3-27) and then passing the difficult to solder material through molten solder to form a dip solder plating layer (col 4 lines 30-33). The solder has a thickness of about 50 microns (col 4 lines 17-20) The method may be used to join a lid of a packaged part, lead (col 4 lines 16-33) or a connector (col 2 lines 5-14) and may be performed in an inert atmosphere (col 4 lines 5-19). See also Nagashima claims 1 and 2.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 16-25, 27, 31, 33-36 and 38-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dale (USPN 3883946).

Dale teaches a solder coated material comprising a plated layer of material having excellent solderability on a substrate comprising an iron-nickel alloy (col 5 lines 16-54). This layer may be Au, Ag, Ni or an alloy containing Sn and Ag with a thickness of 0.5 to 3.0 microns (col 8 line 55 – col 9 line 6col 5 line 46 – col 6 line 13). A solder coating is provided on the base layer and has a thickness of 2.0 – 50 microns (col 6 lines 13-50). The soldered portion of the material may be used to join a variety of Fe-Ni structures including but not limited to a lid of a packaged part (col 2 lines 1-17 and col 9 lines 48-67) or module devices (col 10 lines 46-56). Although the layer may be applied as a foil, hot dipping is an alternate method of applying the solder at a thickness of 10 microns (col 6 lines 39-51). It is noted that the structure of the soldered material and portion to be soldered will be the same regardless of the solder application method provided the solder deposit has the same thickness. See also Dale claims 1, 1, 12, 23 and 33. However, the type of plating is not further disclosed.

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ electroplating to plate a thin, uniform layer of metal (gold) (Dale, col 6 lines 4-23) in a simple and reliable manner as is conventional in the art.

5. Claims 32 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dale (USPN 3883946) in view of Akiba et al. (USPN 6353540).

Dale teaches a solder coated material comprising a plated layer of material having excellent solderability on a substrate comprising an iron-nickel alloy (col 5 lines 16-54). This layer may be Au, Ag, Ni or an alloy containing Sn and Ag with a thickness of 0.5 to 3.0 microns (col 8 line 55 – col 9 line 6col 5 line 46 – col 6 line 13). A solder coating is provided on the base layer and has a thickness of 2.0 – 50 microns (col 6 lines 13-50). The soldered portion of the material may be used to join a variety of Fe-Ni structures including but not limited to a lid of a packaged part (col 2 lines 1-17 and col 9 lines 48-67) or module devices (col 10 lines 46-56). Although the layer may be applied as a foil, hot dipping is an alternate method of applying the solder at a thickness of 10 microns (col 6 lines 39-51). It is noted that the structure of the soldered material and portion to be soldered will be the same regardless of the solder application method provided the solder deposit has the same thickness. See also Dale claims 1, 12, 23 and 33. However, bonded batteries are not disclosed.

Akiba teaches bonding of batteries including shields (col 10 lines 55-65 and col 38 lines 5-21) with a thin metal plating layer (col 29 line 61 – col 30 line 41 and col 32

lines 8-34) to which solder is bonded (col 31 lines 39-54). Solder may be applied by hot dipping (col 35 line 46 – col 36 line 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the same materials and methods to bond similar materials (Fe-Ni or Kovar) in a variety of structures and devices (Dale, col 2 lines 1-25 and col 7 lines 20-41).

6. Claims 16-31, 34-36 and 39-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lichtenberger (USPN 6390353 B1) in view of Elliott (USPN 5232562).

Lichtenberger teaches a solder coated material comprising a plated layer of material having excellent solderability on a substrate comprising an iron-nickel alloy (col 1 lines 13-25). This layer may be Au, Ag, Ni or an alloy containing Sn and Ag over which solder is deposited in a conventional manner (col 2 line 50 – col 3 line 29). The electroplated layer to be soldered is 4 microns (col 3 lines 55-61). The soldered portion of the material may be used to join a variety of Fe-Ni structures including but not limited to a lid of a packaged part (col 2 lines 1-28). The solder is applied to a thickness of 20 to 50 microns and may be processed in an inert atmosphere (col 4 lines 3-37). It is noted that the structure of the soldered material and portion to be soldered will be the same regardless of the solder application method provided the solder deposit has the same thickness. See also Lichtenberger claims 1, 1, 12, 23 and 33. However, dip soldering is not further disclosed.

Elliot teaches a method of forming a solder coated material comprising the steps of electroplating a layer of material having excellent solderability (Cu or Sn, col 1 lines 66-68) on a difficult to solder substrate (col 2lines 6-18) and then passing the difficult to solder material through molten solder in a wave soldering process to form a dip solder plating layer (col 4 lines 5-18). The molten solder is maintained in an inert atmosphere and subjected to ultrasonic vibration (col 5 lines 12-38 and col 6 lines 23-36). See also Elliott claims 1-3 and 13-18.

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ the conventional method of ultrasonic, wave soldering to apply a uniform solder layer in a simple and cost-effective manner (Lichtenberger, col 1 lines 35-56).

7. Claims 26, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fister et al. (USPN 4978052) in view of Elliott (USPN 5232562).

Fister teaches a method of forming a solder coated material comprising the steps of electroplating a layer of material having excellent solderability on a substrate comprising Fe-Ni (16) (col 5 lines 1-18) as an oxidation resistant coating having a thickness of 1.2 to 5 microns (col 5 lines 45-64) and then passing the difficult to solder material through molten solder to form a dip solder plating layer (18) having a thickness of about 25 microns (1 mil) (col 9 lines 15-48). The solderable material may be a Sn-Ag alloy (col 4 lines 1-16). The method may be used to join a lid of a packaged part (col 1

lines 49-58) and may be performed in an inert atmosphere (col 7 lines 28-58). However, the dip soldering is not further disclosed.

Elliot teaches a method of forming a solder coated material comprising the steps of electroplating a layer of material having excellent solderability (Cu or Sn, col 1 lines 66-68) on a difficult to solder substrate (col 2lines 6-18) and then passing the difficult to solder material through molten solder in a wave soldering process to form a dip solder plating layer (col 4 lines 5-18). The molten solder is maintained in an inert atmosphere and subjected to ultrasonic vibration (col 5 lines 12-38 and col 6 lines 23-36). See also Elliott claims 1-3 and 13-18.

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ the conventional method of ultrasonic, wave soldering to apply a uniformly dipped, solder layer in a simple manner (Fister, col 8 lines 34-51).

8. Claims 26, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Geschwind (USPN 4331258) in view of Elliott (USPN 5232562).

Geschwind teaches a method of bonding a lid to a package or lead frame (col 2 lines 53-64 and col 3 lines 1-12) comprising the steps of electroplating a layer of material having excellent solderability (gold or nickel) on a substrate comprising Fe-Ni (col 1 lines 25-32 and col 4 lines 12-27) wherein the plated layer is 1.2 to 2.5 microns and the solder layer is 50 microns (2 mils, col 2 lines 35-52). The molten solder is coated by dipping (col 4 lines 32-66). See also Geschwind claims 1-7. However, the dip soldering is not further disclosed.

Elliot teaches a method of forming a solder coated material comprising the steps of electroplating a layer of material having excellent solderability (Cu or Sn, col 1 lines 66-68) on a difficult to solder substrate (col 2lines 6-18) and then passing the difficult to solder material through molten solder in a wave soldering process to form a dip solder plating layer (col 4 lines 5-18). The molten solder is maintained in an inert atmosphere and subjected to ultrasonic vibration (col 5 lines 12-38 and col 6 lines 23-36). See also Elliott claims 1-3 and 13-18.

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ the conventional method of ultrasonic, wave soldering in an inert atmosphere to prevent contamination (Geschwind, col 4 lines 55-66) and thereby apply a uniformly dipped, solder layer in a simple and cost-effective manner (Geschwind, col 1 lines 32-60).

Response to Arguments

9. Regarding applicant's argument that Fister does not teach a hot dip layer on an electroplated layer, see figure 4 which shows the plated layer (36) directly below solder layer (18) as one of the numerous embodiments taught. The solder can be applied by a variety of means including but not limited to hot dipping (col 8 lines 34-51) which is a different embodiment than that shown in figures 1 and 2. However, it is noted that the structure of the soldered material and portion to be soldered will be the same whether the solder is deposited by dipping, printing or brushing in place.

Therefore the 102 rejection of claims 16-23, 25, 27-29 as anticipated by Fister stands and now includes claim 40.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Siemens AG (DT 2340423 A1, method and structure), Do-Thoi et al. (USPN 5156322, method and structure), Tsuji et al. (USPN 5521432, method and structure), Seki et al. (USPN 6165819, method and structure), Tsuzuki et al. (USPN 6316832, battery, shield bonding), Schreiner et al. (USPN 3774427, sonic wave, shield, lid, lead frame), Kato (USPN 5232562, method without solder thickness), Murata et al. (JPN 02-270990), Sato (JPN 09-293958), Obata (JPN 10-102283) and Jin et al. (USPN 6250984 B1).

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynne Edmondson whose telephone number is (703) 306-5699. The examiner can normally be reached on M-F from 7-4 with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (703) 308-3318. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7118 for regular communications and (703) 305-7115 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

Lynne Edmondson
Examiner
Art Unit 1725

10/25/02

LRE
October 25, 2002